

129-10-11/12

On increasing the temperature at the end of the deformation process as a medium for reducing the force of stamping of large-size blanks. (Cont.)

free forging is substituted by hot stamping, it is advisable to do the final stamping at an increased temperature if the available presses are not powerful enough. Effects of the overheating of the material can be fully eliminated by appropriate heat treatment. Therefore, stamping of large-size blanks can be terminated at higher temperatures than those specified in the Soviet technological instructions. Thus, increase of the final stamping temperature, combined with other measures, permits reducing appreciably the necessary forging forces and producing by less powerful equipment a considerable number of large-size forgings.

There are 4 figures and 3 tables.

ASSOCIATION: TsNIITMASH and Nevsk Works imeni Lenin.

AVAILABLE: Library of Congress

Card 3/3

18.1150
18.7100

81526
SOV/137-59-5-10913

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 5, p 210-211 (USSR)

AUTHORS: Snitko, M.N., Belan, N.I., Novikov, V.V.

TITLE: Steel for Cast Parts of Steam Turbines

PERIODICAL: Tr. Nevsk. mashinostr., z-da, 1958, Nr 4, pp 59 - 77

ABSTRACT: The authors carried out investigations of 20KhML steel with respect to the macro- and microstructure, mechanical properties (σ_p , σ_s , σ , ψ , a_k) at 20° - 650°C (after heat treatment), the coefficient of linear expansion at 100° - 600°C, a_k at +20 to -100°C after tempering with slow and rapid cooling, after holding at 450° - 550°C for 100 - 5,000 hours and after creep tests; σ_{sm} and σ_{ex} at 470°, 510° and 550°C were also investigated. The 20KhML steel was cast into cross-shaped specimens up to 750 mm, with wall thickness of 30 - 70 mm. Heat treatment of the specimens consisted in normalization from 890° - 910°C; tempering at 640° - 660°C, cooling to 300°C in a furnace and then in air. It was established that cast 20KhML

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SCV/137-59-5-10913

Steel for Cast Parts of Steam Turbines

steel after normalization and tempering 1) had high σ_b , σ_s , δ , ψ and a_k , which were maintained at a sufficiently high level up to 550°C; 2) was not prone to graphitization in holding up to 6,000 hrs at 450° - 550°C; 3) was not prone to heat brittleness at 450° - 550°C in stressed or non-stressed state; 4) reduced considerably a_k at -100°C; 5) had only slight proneness to temper brittleness at 400° and 600°C; 6) had, at temperatures of 470°, 510° and 550°C, values of σ_{sm} - 16.2, 6.6, 2.9 kg/mm² (1.10⁻⁵%/hr) and σ_{ex} 26.0, 14.2, 6.0 kg/mm² (100,000 hrs), respectively. ✓

T.F.

Card 2/2

18.1150

81527
SOV/137-59-5-10941

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 5, p 215 (USSR)

AUTHORS: Belan, N.I., Novikov, V.V., Kanfor, V.M.

TITLE: Forged 20KhM Heat-Resistant Steel

PERIODICAL: Tr. Nevsk. mashinostroita. z-da, 1958, Nr 4, pp 119 - 132

ABSTRACT: The authors investigated mechanical properties ($\sigma_b, \delta, \psi, a_k$) at 20°C and 320° - 570°C and after holding at such temperatures up to 3,000 hrs; σ_{sm} and σ_{ext} at 420° - 520°C of radial and tangential forged specimens of 1.5 and 3 ton 20KhM steel ingots containing (in %): C 0.21, Cr 0.89, Mo 0.41, smelted in a basic electric arc furnace. It was established that forgings of up to 145 mm cross-section had practically the same mechanical properties in all the zones. Mechanical properties and the micro-structure of forgings do not change after holding up to 3030 hrs at 420° - 520°C in unloaded and loaded state. At 420°, 470° and

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Forged 20KhM Heat-Resistant Steel

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SOV/137-59-5-10941

520°C (respectively) σ_{sm} (1.10^{-5} hr) is 29.0; 13.5 - 15.0; 4.4 - 6.2;
 σ_{ext} (100,000 hrs) is 38; 36 - 30; 12 - 14 kg/mm². There are 5 bibliographical titles.

T.F.

Card 2/2

38707

S/598/62/000/007/039/040
D217/D307

18.1285
AUTHORS: Belan, N. I., Idel'chik, B. M., Borisova, M. S. and
Chikurova, A. A.

TITLE: Investigating titanium alloy AT6 (AT6) for its suitability as material for working wheels of supercharges operating in aggressive media

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Titan i yego splavy. no. 7, Moscow, 1962. Metallokhimiya i novyye splavy, 288-293

TEXT: Forgings of the alloy AT6, containing 5.8 wt-% Al and 1.1% Cr + Fe + Si + B, were studied. The mechanical properties of the as-received material were tested on probes from the surface and from the central portion of the forging. In order to choose the optimum heat treatment of manufactured components and to elucidate the influence of annealing on the change in mechanical properties of the alloy, two heat treatment procedures were tried out. One of them, recommended by the Institute of Metallurgy AS USSR, con-
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Investigating titanium alloy ...

S/598/62/000/007/039/040
D217/D307

sists in heating to 850°C, soaking at that temperature for 1 hour and cooling in air. The other consisted in heating to 840°C, soaking at that temperature for 1 hour and furnace-cooling to 600°C, followed by cooling in air. The alloy was also tested for its corrosion resistance. It was found that the alloy in the forged condition possesses a high proof stress, both at the surface and in the center of the forgings, high toughness and a satisfactory plasticity. Heat treatment of the alloy at 840°C with subsequent air cooling increases the impact resistance somewhat, without affecting the original strength and plasticity. Furnace-cooling from 840°C to 600°C leads to a slight reduction in percentage elongation. The alloy did not exhibit any tendency to stress corrosion cracking during testing with application of a tensile stress of 70 kg/mm² for 750 hours at room temperature in water saturated with H₂S. Also, the general corrosion resistance of the alloy in water saturated with H₂S was found to be high. On bringing the alloy in contact with the steel 1X18H9T (1Kh18N9T) with an area ratio of 1:1, the corrosion resistance of the steel in H₂S-saturated water de-

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Investigating titanium alloy ...

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creased somewhat, but still remained at a high level. Under conditions of short-term testing (700 hours) in hydrogen at 100°C and a pressure of 60 atm, no tendency to hydrogen embrittlement was observed. There are 4 figures and 3 tables.

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ACCESSION NR: AT4007056

S/2598/63/000/010/0322/0331

AUTHOR: Belan, N. I.; Borisova, M. S.; Idel'chik, B. M.; Chikurova, A. A.

TITLE: Titanium alloys AT-3, AT-4, AT-6 and VT-3-1 as materials for compressor discs operating in various aggressive media

SOURCE: AN SSSR. Institut metallurgii. Titan i yego splavy*, no. 10, 1963. Issledovaniya titanovy*kh splavov, 322-331

TOPIC TAGS: titanium alloy, titanium alloy property, elevated temperature property, subzero temperature property, AT-3 titanium alloy, AT-4 titanium alloy, AT-6 titanium alloy, VT-3-1 titanium alloy, titanium alloy corrosion, titanium alloy stress corrosion, titanium aluminum chromium alloy, silicon containing alloy, iron containing alloy, boron containing alloy, titanium alloy corrosion resistance

ABSTRACT: The possibility of using titanium-base alloys for compressor runner discs operating in air and aggressive media has been investigated. As shown in Table 1 of the Enclosure test specimens of alloys AT-3, AT-4, AT-6, and BT-3-1 have been used, and their mechanical properties, thermal stability, compatibility with aggressive

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ACCESSION NR: AT4007056

media, and galvanic action with steels have been investigated under various conditions. It has been found that: (1) Optimum annealing has practically no influence on the original mechanical properties of alloys AT-3, AT-4, and AT-6. (2) Short-time tensile strength of alloys AT-3, AT-4, AT-6, and BT-3-1 decreases with the increase of temperature up to 400 C and ductility increases. (3) Impact resistance decreases considerably at low temperatures, particularly at -80 C for AT-4, at -40 C for AT-6, and below -80 C for BT-3-1; however, even at the lowest test temperature of -180 C, the lowest impact resistance is $2-3 \frac{\text{kg m}}{\text{cm}^2}$. (4) Heating of alloys AT-3, AT-4, AT-6, and BT-3-1 for 3700 hours at 200 C has no influence on mechanical properties. Heating of alloys AT-4, AT-6, and BT-3-1 for 9500 hours at 400 C considerably reduces plasticity and impact strength, but increases hardness and tensile strength. (5) At room temperature alloys AT-3, AT-4, and BT-3-1 have high corrosion resistance to a saturated aqueous solution of hydrogen sulfide, to 5% hydrochloric acid solution, and to an "Industrial" atmosphere containing 0.1% SO₂ and 0.5% CO₂ at 100% relative humidity. Coupling of the alloys with steels of the type 1X 18H9T and X 17H2 in saturated aqueous solution of hydrogen sulfide and with steels 40X and 1X 18H9T in an "Industrial" atmosphere barely reduces the corrosion resistance of the steels. (6) At room temperature the corrosion resistance of alloys AT-3,

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ACCESSION NR: AT4007056

AT-4, and BT-3-1 to 10% hydrochloric acid solution is satisfactory. (7) At room temperature alloys AT-3, AT-4, and BT-3-1 have not shown a tendency to corrosion cracking under simultaneous action of tensile stress (80% of yield) and an aggressive medium: (a) during 500 hours in saturated aqueous solution of hydrogen sulfide; (b) during 1200 hours in 5% hydrochloric acid solution. (8) At room temperature alloys AT-4 and BT-3-1 have not shown a tendency to corrosion cracking during 1200 hours in 30% nitric acid solution under simultaneous action of tensile stress (60% of yield). (9) At room temperature alloys AT-3, AT-4, and BT-3-1 have indicated a tendency to corrosion cracking in 10% hydrochloric acid solution under simultaneous action of tensile stress (80% of yield). (10) Alloys AT-3, AT-4, and BT-3-1 have shown a tendency to absorb atomic hydrogen at conditions of electrolysis at 45C; simultaneous action of tensile stress (60% of yield) during the process of hydrogen absorption leads to the brittle fracture of specimens after a relatively short time (20-50 hours). Orig art. has: 10 tables.

ASSOCIATION: Institut Metallurgii AN SSSR (Metallurgical Institute AN SSSR)

SUBMITTED: 00

DATE ACQ: 27Dec63

ENCL: 01

SUB CODE: MM

NO REF SOV: C00

OTHER: 000

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ACCESSION NR: AT4007056

ENCLOSURE: 01

Table 1 -- Chemical composition, dimensions and number of tested forging billets of titanium alloys AT-3, AT-4, AT-6, and BT-3-1.

Alloy	Composition, % (*)							Dimensions, mm		Number of tested billets
	Al	Cr	Mo	Si	Fe	B	Σ Cr, S, Fe	dia.	height	
AT-3	2.8	0.30	-	0.23	0.51	0.01	1.0	430	110	1
AT-4	4.69	0.80	-	0.34	0.26	0.01	1.4	430	95	2
AT-6	5.52	0.71	-	0.64	0.29	0.01	1.6	430	95	1
BT-3-1	5.41	1.9	2.34	0.06	0.16	-	-	480	120	2

* Note: The rest is titanium

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L 02422-67 EWT(m)/T/E P(w)/EMP(t)/ETI IJP(o) WB/JD

ACC NR: AP6031402

SOURCE CODE: UR/0114/66/000/009/0037/0040

AUTHOR: Idel'chik, B. M. (Engineer); Belan, N. I. (Engineer)

ORG: none

TITLE: Behavior of titanium alloys applied to the working conditions of compressors

SOURCE: ²⁷Energomashinostroyeniye, no. 9, 1966, 37-40

TOPIC TAGS: aluminum containing alloy, chromium containing alloy, corrosion resistant alloy, centrifugal compressor, titanium alloy, tensile strength, elongation/ AT-3 titanium alloy, AT-4 titanium alloy, AT-6 titanium alloy, BT3-1 titanium alloy

ABSTRACT: In a search for compressors materials capable of working in aggressive gas atmospheres, AT-3 (2.8% Al, 0.3% Cr, 0.23% Si, 0.51% Fe, 0.01% B), AT-4 (4.69% Al, 0.80% Cr, 0.34% Si, 0.26% Fe, 0.01% B), AT-6 (5.52% Al, 0.71% Cr, 0.64% Si, 0.29% Fe, 0.01% B) and BT3-1 (5.41% Al, 1.9% Cr, 2.34% Mo, 0.06% Si, 0.16% Fe) titanium alloys were investigated. After annealing (AT-3 at 800C, AT-4 at 850C, AT-6 at 900C, and BT3-1 at 870C with 7 hr holding and air cooling) these alloys had a room-temperature tensile strength (σ_b) of 69.5, 86.7, 92.4, and 94.8 kg/mm², an elongation (δ) of 17.5, 15.6, 9.2, and 12.4% and a notch toughness (a_K) of 8.9, 5.5, 5.5, and 8.4 kgm/cm², respectively. At 400C, the tensile strength decreased to 46.2, 56.3, 71.8, and 61.0, respectively, but the elongation did not change. At -180C the notch toughness for AT-4, AT-6 and BT3-1 alloys was 2.0, 2.2, and 3.3 kgm/cm², respectively. After holding at 200C for 3700 hr the AT-3, AT-4, Card 1/2

UDC: 669.295.:621.51.001.5

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ACC NR: AP6031402

6

AT-6, and BT3-1 alloys had a σ_b of 68.8, 88.6, 100.4, and 96.5 kg/mm²; after holding at 400C for 9500—10000 hr, the σ_b was 71.4, 93.8, 107.5, and 107.5 kg/mm², respectively. The ductility and notch toughness noticeably decreased. For instance, the elongation after holding at 400 9500—10000 hr for these alloys was 10.5, 5.5, 4.2, and 4.2% and the notch toughness was 5.4, 2.7, 1.9, and 1.9 kgm/cm², respectively. AT-4 and BT3-1 are very corrosion resistant in nitrose gas (8.10% NO-NO₂, 6.00% O₂, rest N₂ at 65—75C). AT-4, AT-6, BT3-1 were also very corrosion resistant in hydrocarbon gas with aggressive components, and in 45% HNO₃ at 75C all the tested alloys are corrosion resistant. However, the alloys showed low corrosion resistance in sulfur dioxide (7.45% SO₂, 11.5% O₂, rest N₂) and 85% H₂SO₄ at 65°. On the basis of these tests, AT-4 alloy was selected and used for manufacturing a K-100-61-2 type centrifugal compressor intended for air compression to 7 atm. It is the first time in the USSR that titanium alloy has been used for building centrifugal compressors working in aggressive atmospheres. Orig. art. has: 6 tables. [WW]

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 004/

hs

Card 2/2

BELAN, N. R.

Swine

Work achievements of swineherd A.G. Grinchenko. Sots. zhiv. 15, No. 3, 1953.

Monthly List of Russian Accessions, Library of Congress
June 1953. UNCL.

L 01807-66 EPA/EWT(1)/EWP(f)/T-2 WW

ACCESSION NR: AP5020638

UR/0147/65/000/003/0071/0075
621.515

AUTHOR: Belan, N. V.; Yershov, V. N. 34
14.55 B

TITLE: Plotting the left branch of a pressure-head curve of an axial compressor rotor

SOURCE: IVUZ. Aviatsionnaya tekhnika, no. 3, 1965, 71-75

TOPIC TAGS: axial compressor, compressor stage, compressor design, compressor rotor, compressor stall 2, 49, 55

ABSTRACT: The instability of an axial compressor in the form of a rotating stall is determined by the stage characteristics, particularly the dependence of the pressure head on the flow rate. The rotating stall usually occurs at a flow rate below that which corresponds to the maximal pressure head, i.e., under the conditions described by the left branch of the compressor characteristic curve, which is of interest in calculating variable operating conditions of multi-stage compressors. The authors present a method for obtaining the left branch of the curve for a compressor rotor with a relatively large

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L 01807-66

ACCESSION NR: AP5020638

hub diameter. The method is based on measuring the pressure-head variation under rotating stall conditions. It can also be applied to compressor stages with smaller hub diameters under conditions of total stall. Orig. art. has: 7 figures and 6 formulas. [AC]

ASSOCIATION: none

SUBMITTED: 14Dec64

ENCL: 00

SUB CODE: PR, ME

NO REF SOV: 005

OTHER: 000

ATD PRESS: 4085

9D
Card 2/2

BELAN, N.Ya., inzh.; KHODAREV, D.V., inzh.

Results of one year of work of track sections. Put' i put. khoz. no.8:
16-17 Ag '59. (MIRA 13:3)

1. Nachal'nik otдела puti, zdaniy i soorusheniy Luganskogo otdeleniya
Donetskoy dorogi (for Belan). 2. Nachal'nik otдела puti, zdaniy i
soorusheniy Krasnolimanskogo otdeleniya Donetskoy dorogi (for Khodarev).
(Railroads--Management)

BELAN, P. Ya., Cand Agr Sci -- (diss) "Results and methods
of development of Ukrainian saddle-draft type of horses (in *house*
plant ~~and~~ No 173)." Kiev, 1957. 15 pp (Min of Higher Education
Ukr SSR, Ukrainian Order of Labor Red Banner Acad ~~of~~ Agr Sci),
100 copies (KL, 52-57, 109)

- 83 -

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2. USSR (600)
4. Forging
7. Forge metallurgists struggle to save materials, fuel and electric power.
Za ekon. mat. no. 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

BARDIN, I.; BRIAN, R.; BEKHTIN, N.; BOYKO, V.; BORISOV, A.; BYCHKOV, V.;
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S.; DZHAPARIDZE, Ye.; DIDENKO, V.; D'YAKONOV, N.; ZHURAVLEV, S.;
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ROZHKOV, A.; SAPOZHNIKOV, L.; SEDOV, P.; SOKOLOV, P.; TEVOSYAN, I.;
TIKHONOV, N.; TISHCHENKO, S.; FILIPPOV, B.; FOMENKO, N.; SHEKOV,
A.; SHERMET'YEV, A.

Fedor Aleksandrovich Merkulov. Koks i khim.no.7:62 '56. (MLRA 9:12)
(Merkulov, Fedor Aleksandrovich, 1900-1956)

BARDIN, I.P.; BORISOV, A.F.; BELAN, R.V.; YERMOLAYEV, G.I.; VAYSBERG, L.E.;
ZHEREBIN, B.N.; BORODULIN, A.I.; SHAROV, G.V.; DOMNITSKIY, I.P.; CHUSOV, F.P.
SOROKO, L.N.; KLIMASENKO, L.S.; PAVLOVSKIY, S.I.; ZIL'BERSHTYIN, M.B.;
LYULENKOV, I.S.; NIKULINSKIY, I.D.; BRAGINSKIY, I.A.; SALOV, Ye.M.;
TROSHIN, N.F.; PETRIKEYEV, V.I.; ARGUNOV, M.I.; DUL'NEV, F.S.; BIDULYA, L.N.
GAYANOV, S.A.; FROLOV, N.P.; VINICHENKO, V.S.; KOGAN, Ye.A.

G.E. Kazarnovskii; obituary. Stal' 15 no.8:757 Ag'55. (MLRA 8:11)
(Kazarnovskii, Grigoriï Efimovich, 1887-1955)

BELAN, Roman Vasil'yevich ; DENISENKO, Ivan Markovich; SMIRNOV, Ye.I.,
red.; GERASIMOVA, Ye.S., tekhn. red.

[Prospects for the expansion of ferrous metallurgy in the U.S.S.R.]
Perspektivy razvitiia chernoi metallurgii SSSR. Moskva, Ekonomizdat,
1962. 189 p. (MIRA 15:6)
(Iron industry) (Steel industry)

BELAN, Roman Vasil'yevich; PRAVKIN, G.A., red.; YELAGIN, A.S., tekhn.
red.

[Third metallurgical supply center]Tret'ia metallurgicheskaja.
Moskva, Sovetskaja Rossiia, 1959. 46 p. (MIRA 15:11)
(Siberia--Iron and steel plants)

VOROB'YEV, L.; BELAN, S.; KAZACHUK, S.

Kazakhstan pledges a billion poods of grain. Makh.-elev. prom. 24
no.4:2-3 Ap '58. (MIRA 11:5)

1. Ministerstvo khleboproduktov Kazakhskoy SSR (for Vorob'yev).
2. Direktor Shortandinskogo elevatora, Kazakhstan (for Belan).
3. Upravleniye khleboproduktor Karagandinskoy oblasti (for Kazachuk).
(Kazakhstan—Grain trade)

BELAN, S.

At the Shortandy grain receiving point. Muk.-elev. prom. 23 no.4:
16-17 Ap '57. (MIRA 10:5)

1. Direktor Shortandinskogo khlebopriyemnogo punkta.
(Shortandy--Grain handling)

TRESHCHINSKIY, A.I.; NIKOLAYEV, Ya.A.; UMANSKIY, M.A.; BEKAN, S.N.;
LYAVINETS, A.S.; MALOVISHKO, A.Ya.; PIVCHIK, D.T.

Effect of andaxin on healthy people. Vrach.delo no.11:149-150
N '62. (MIRA 16:2)

1. Kafedra torakal'noy khirurgii i anestezilogii (zav. - prof.
N.M. Amosov) Kiyevskogo instituta usovershenstvovaniya vrachey.
(MEPROBAMATE)

SHVETSOVA-SHILOVSKAYA, K.D.; BELAN, S.R.; MEL'NIKOV, N.H.

Herbicides and plant regulators. Part 39: Synthesis of some
new derivatives of urea containing a carboethoxy group. Zhur.
ob.khim. 33 no.10:3147-3149 0 '63. (MIRA 16:11)

BELAN, S.T., brigadir.

~~On~~ orchard. Nauka i pered.op. v sel'khoz. 6 no.12:17-19 D '56.
(MIRA 10:1)

1. Sadovodcheskaya brigada kolkhoza imeni Stalina, Korol'skogo
rayona, Primorskogo kraya.

(Maritime Territory--Fruit culture)

BELAN Y

Search, look, and check. IUn.nat. no.6:15 Je '57. (MIRA 10:7)
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GRIGEL, J.; IHNATO, L.; SANDRIK, P.; BELAN, V.

On the principle of optimum load of hydraulic power stations in a mixed electric power system. Bul EGU no.1:3-8 '64.

Programming of the peak load of a hydraulic power station by an analog computer. Ibid.:8-12

A method of calculating the consumption of primary energy in a mixed electric power system. Ibid.:13-16

ALEKSEYEV, V.A.; ~~BELAN, V.G.~~; BESSMERTNEY, I.I.; BOZHKO, Ye.I.;
VASIL'YEV, N.A.

Effect of the curing conditions of samples on the mechanical
properties of concrete made with naturally burned clays.
Trudy TASHIIT no.18:72-77 '61.

(MIRA 18:3)

BELAN, Yu.M., inzh.; GONCHAROV, Yu.G., inzh.; DAVIDKOVICH, A.S., inzh.;
REZNITSKIY, D.L., inzh.

Continuous automatic control of the composition of flue gases.
Gor.zhur. no.3:60-61 Mr '65. (MIRA 18:5)

1. Metallurgavtomatika, Dnepropetrovsk.

SEIWERTH, Z.; BELANCIC, I.

Primary carcinomas of the resected stomach. Acta chir. iugosl.
3 no.4:330-342 1956.

1. Kirurški odjel (predstojnik dr. D. Riessner) i Rentgenoloski
zavod (predstojnik prof. dr. S. Kadrnka) Opće bolnice Dr.
M. Stojanovica u Zagrebu.

(GASTRECTOMY, compl.

postop. primary cancer of stump (Ser))

(STOMACH NEOPLASMS, surg.

gastrectomy, postop. primary cancer of stump (Ser))

YUGOSLAVIA

S. PAJIAN, V. ORBUTIC, I. BILANIC, B. CRIVIN and C. DUGAN,
Pediatric Department (Djecji odel) Chief (Prof) Dr S. PAJIAN, Radiologic
Institute (Zavod za radiologiju) Chief Prof Dr V. ORBUTIC, and Urologic
Department (Uroloski odel) Chief Dr B. CRIVIN, of the General Hospital
(Opca bolnica) "Dr. M. Stojanovic", Zagreb.

Anomalies of the Urteral Ostium.

Zagreb, Acta Chirurgica Iugoslavica, Vol 9(196), No 3-4, 1962; 11
254-263.

Abstract [English summary modified]: Review of various diagnostic and
surgical details. Five case reports of ectopic vaginal urteral orifice,
ages 5, 7, 11, 19 and 26. Urterocoeleostomy in 4, hemipelvectomy
ureterectomy in 1: excellent results in all. Six urograms,
2 Yugoslav and 13 Western references.

1/1

SMILJANIC, B.; BELANCIC, I.; SIPUS, N.

Neurinoma of the stomach. Acta chir. Iugosl. 11 no.1:59-68
O '64.

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(Predstojnik prof. dr. S. Kadrnka) i Odjel za patologiju (Sef
pri, dr M. Knezevic) Opce bolnice Dr M. Stojanovic u Zagrebu.

NAJMAN, E.; OBERITER, V.; BELANCIC, I.; OBERITER, B.; DUGAN, C.

Abnormalities of the ureteral orifice. Acta chir. iugosl. 9 no.3/4:
254-264 '62.

1. Dječji odjel (Sef dr E. Najman), Zavod za radiologiju (Sef prof. dr
F. Kadrnka) i Uroloski odjel (Sef dr B. Barac) Opće bolnice "Dr. M.
Stojanovic" u Zagrebu.

(URETER)

BELANCIC, Ivan, Dr.

Corrected cholecystography with changed position of patient.
Lijec. vjes. 78 no.11-12:550-554 Nov-Dec 56.

1. Iz Zavoda za rentgenologiju Opce bolnice dra. Stojanovica u Zagrebu.

(CHOLECYSTOGRAPHY

corrected with films taken in changed positions (Ser))

BEKLANCIC, Ivan; KORNFIELD, Mario; SAMOSCANEC, Slavko

Contribution to the diagnosis of chloro-leukemia. Radovi med.fak.,
Zagreb 7 no.2:93-110 '59.
(LEUKOSARCOMA diag)

SIPUS, Nikola, dr.; STANCIC-ROKOTOV, Fedor, dr.; BELANCIC, Ivan, dr.

Congenital intracranial arteriovenous aneurysm as the cause of hydrocephalus. Liječn. vjesn. 83 no.8:795-799 '61.

1. Iz Zavoda za patologiju, Kirurškog odjela i Zavoda za rendgenologiju
Opće bolnice "Dra M. Stojanovica" u Zagrebu.
(BRAIN blood supply) (FISTULA ARTERIOVENOUS compl)
(HYDROCEPHALUS etiol)

BASIC, Marko, dr.; BELANCIC, Ivo, dr.

Post-cholecystectomy syndrome in the light of modern cholangiographic data. Liječn. vjesn. 84 no.7:649-659 '62.

1. Iz Zavoda za radiologiju Opće bolnice "Dra Mladona Stojanovica" u Zagrebu.

(CHOLECYSTECTOMY)

(CHOLANGIOGRAPHY)

YUGOSLAVIA

Dr. Nedeljko POPOV and Dr. Ivo BFLANCIĆ, Department of Surgery and
Rentgenology, Unit of General Hospital (Kirurški odjel i Rentgenološki
institut Opće bolnice) "Dr. M. Stojanović", Zagreb.

"Some Observations Regarding the Cervical Rib Syndrome."

Zagreb, Hirurški Vjesnik, Vol 24, No 10, Oct 1962; pp 1011-1020.

Abstract (German summary modified) : Study of 23 patients. Of these,
17 were bilateral but usually symptoms differed considerably on the 2
sides, depending more on angle of rib with vertical axis (horizontal
ribs = severe symptoms) than on length of cervical rib. Surgical
removal of rib and scalenotomy are considered essential. Eight
rentgenograms, 1 Yugoslav, 1 Bulgarian, 8 Western references.

POPOV, Nedeljko, dr.; BELANCIC, Ivo, dr.

Some observations on the problem of the cervical rib syndrome.
Liječn. vjesn. 84 no.10:1011-1020 '62.

1. Iz Kirurškog odjela i Rendgenološkog instituta Opće bolnice
"Dr Ml. Stojanovica" u Zagrebu.
(SCALenus ANTICUS SYNDROME)

BELANČIĆ, Ivo, dr.; STANČIĆ-ROKOTOV, Fedor, dr.; BENKOVIC, Bjeanka;
GJURIN, Boris, dr.; SLOVIC, Zorislav, dr.

A technic of narrow band seriography. *Liječni. vjesn.* 80 no.5:
613-618 My '64

1. Iz Zavoda za radiologiju i nuklearnu medicinu i iz Kirurškog
odjela Opće bolnice "Dr. Mladen Stojanović" u Zagrebu.

BORCIC, S.; BELANIC-LIPOVAC, V.; SUNKO, D. E.

Secondary hydrogen isotopes effect. III. Acetolysis of endo- and exo-norbornyl-5,6- d_2 p-bromobenzenesulfonates. Croat chem acta 33 no.1:35-39 '61.

1. Institute "Ruder Boskovic," Zagreb, Croatia, Yugoslavia. 2. Editorial Board, "Croatica chemica acta, members (for Borcic and Sunko).

(Hydrogen) (Bromo-derivatives (Organic chemistry))
(Acetolysis) (Sulfonates) (Benzene)

BELANISHVILE, G. V. GEORGADZE, G. YA.

Tumors.

Modifications of leukolytic capacity of blood in cases of induced tumors in hamsters. Medych. zhur. 20, No. 6, 1951.

Monthly List Russian Accessions, Library of Congress, August 1952.
Unclassified.

L 36199-66 EWT(1)
ACC NR: AP6011455

SOURCE CODE: UR/0109/66/011/004/0748/0750³⁴
33
B

AUTHOR: Vzyatyshev, V. F.; Belanov, A. S.

ORG: Moscow Power-Engineering Institute (Moskovskiy energeticheskiy institut)

TITLE: Maximum energy concentration in a circular dielectric waveguide 25

SOURCE: Radiotekhnika i elektronika, v. 11, no. 4, 1966, 748-750

TOPIC TAGS: dielectric waveguide, circular waveguide

ABSTRACT: A brief analysis is presented of energy-concentrating characteristics of the dielectric waveguide in which a round dielectric rod acts as a guiding structure. W. M. Mallach's numerical results (ETZ, 1955, v. 8, no. 1, 8) are in the region where the Hankel-function approximation is liable to great errors. In addition, the authors believe that the concentrating characteristics of an open transmission line should be evaluated on the basis of the spatial distribution of

UDC: 621.372.829.09

Card 1/2

L 36199-66

ACC NR: AP6011455

energy. Two simple formulas are developed which permit calculating minimum diameters of that field region where 99% of the transmitted power is concentrated; the required waveguide diameter can be determined from known dielectric constants of the media involved. "The authors wish to thank N. A. Valyus for the statement of the problem and his constant interest in the work." Orig. art. has: 2 formulas and 1 table.

SUB CODE: 09 / SUBM DATE: 05Jul65 / ORIG REF: 000 / OTH REF: 004

Card 2/2 *lll-*

BELANOV, V.I., zootechnik.

Voronesh station for the breeding and artificial insemination of
animals. Zhivotnovodstvo 20 no.4:52-53 Ap '58. (MIRA 11:3)

1. Stantsiya po plemennomu delu i iskusstvennomu osemeneniyu.
(Voronesh Province---Artificial insemination)

BELANOV, V.M.; INDUTNYY, V.F.

Characteristics of the physical properties of crystalline rocks
in the northwestern part of the Ukrainian Shield. Geofiz. sbor.
no.9:30-38 '64. (MIRA 18:6)

1. Institut geofiziki AN UkrSSR.

L 45988-66 EWT(1)

ACC NR: AP6030161

SOURCE CODE: UR/0120/66/000/004/0214/0215

AUTHOR: Belanova, A. A.; Nasledov, D. N.; Sreseli, O. M.

ORG: Physico-Technical Institute AN SSSR, Leningrad (Fiziko-tekhnicheskiy institut AN SSSR)

TITLE: Thermostable Hall generators

SOURCE: Pribery i tekhnika eksperimenta, no. 4, 1966, 214-215

TOPIC TAGS: Hall generator, Hall effect

ABSTRACT: Materials in the manufacture of Hall generators and characteristics of the latter are described. Source material: GaAs having a concentration of $(3-8) \cdot 10^{16}$ per cm^3 and a mobility of $3000 \text{ cm}^2/\text{v sec}$. Sides ratio: 2 to 3; plate thickness, 0.12--0.2 mm; nonrectifying contacts. Characteristics: temperature coefficient, 0.01--0.03% per 1°C within 0--300C. Voltage sensitivity, 10--50 mV/oe . Plots of output voltage vs. magnetic-field strength and output voltage vs. temperature (0--300C) are shown. Orig. art. has: 2 figures. [03]

SUB CODE: 09 / SUBM DATE: 13Jul65 / ORIG REF: 000 / ATD PRESS: 5087

UDC: 621.382.61

Card 1/1

pb

L 2345-66 EWT(m)/EPF(n)-2/EWA(h)
ACCESSION NR: AT5022112

UR/3159/65/000/003/0001/0015

AUTHORS: Belanova, T. S.; Van'kov, A. A.; Mikhaylus, F. F.; Stavitskiy, Yu. Ya.

TITLE: Absolute determination of absorption cross section for 24 Kev neutrons

SOURCE: Obninsk. Fiziko-energeticheskiy institut. /Doklady/, no. 3, 1965.
Absolyutnyye izmereniya secheniy pogloshcheniya neytronov s energiyey 24 kev, 1-15

TOPIC TAGS: neutron absorber, neutron cross section, neutron absorption, neutron capture, neutron counter, neutron detector, Monte Carlo method

ABSTRACT: The influence of a particular experimental method used in the determination of neutron absorption cross section on the magnitude of the cross section was studied, and neutron absorption cross sections for 18 different metals for 24 Kev electrons were determined. The data obtained were compared with those reported in the literature. The neutron source was (Sb - Be). The cross sections were determined by the spherical geometry transmission method. The measurements were carried out using two different counting arrangements, viz: an all-wave long counter and a water tank equipped with a system of dividing chambers. An experimental procedure similar to that of H. W. Schmitt and C. W. Cook (Nucl. Phys. 20, 202, 1960) was used. The effect of resonance blocking on the cross section magnitude was also investigated. All experimental results were treated according to the Monte Carlo

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L 2345-66

ACCESSION NR: AT5022112

21

method and are presented in Table 1 on the Enclosure. It is concluded that, with the exception of lead, the data obtained are in good agreement with those of Schmitt and Cook (see reference above). The authors thank A. I. Lavrenko and O. D. Kazachkovskiy for their interest in this work and M. A. Artemov, V. V. Piskunov, Yu. M. Nikitin, and L. Ye. Fedorov for the help received in setting up the apparatus. Orig. art. has: 2 tables and 4 equations.

ASSOCIATION: Fiziko-energeticheskiy institut, Obninsk (Physics and Power Institute, Obninsk)

SUBMITTED: 00

ENCL: 01

SUB CODE: NP

NO REF SOV: 005

OTHER: 008

Cord 2/3

L 2345-66

ACCESSION NR: AT5022112

ENCLOSURE: 01
0

Table 1
Experimental results

AN	Z	Ca. n. barn
1.	Ce	10 ± 4
2.	Cu	89 ± 8
3.	Zn	64 ± 7
4.	Zr	18 ± 8
5.	Nb	270 ± 18
6.	Mo	182 ± 12
7.	Ag	280 ± 80
8.	Cd	384 ± 20
9.	Jn	776 ± 68
10.	Sn	128 ± 9
11.	Sb	880 ± 75
12.	W	800 ± 34
13.	Al	570 ± 80
14.	Hg	235 ± 80
15.	Pb	45 ± 7
16.	Bi	8 ± 5
17.	Th ²³²	615 ± 33
18.	U ²³⁸	415 ± 18

beh
Core 3/3

BELANOVA, T. S.
LEYFINSKIY, A. I., KAZACHKOVSKIY, O. D., ARTUKHOV, G. A., BELANOVA, T. S., BARISHNIKOV,
A. I., GALKOV, V. I., STAVISKIY, Yu. Y., STUMBUR, E. A. and SHERMAN, L. Ye.

"Effective Cross-Section Measurements of Fast Neutron Radiation Capture."

paper to be presented at 2nd UN Intl. Conf. on the peaceful use of Atomic
Energy, Geneva, 1 - 13 Sept 58.

AUTHOR: Belanova, T. S.

SOV/56-34-3-7/55

TITLE: The Measurement of the Absorption Cross Section of Fast Neutrons (Izmereniya secheniya pogloshcheniya bystrykh neytronov)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 3, pp. 574-578 (USSR)

ABSTRACT: The absorption cross sections of photoneutrons with energies of 25, 220, and 830 keV were determined for 20 elements by the neutron transmission method using spherical geometry. The neutron source was mounted inside a spherically shaped absorber, which excludes an immediate influence of the elastic scattering. Direct effect of elastic scattering does almost not become observable, because an all-wave counter is used as neutron detector. Thus here by relative measurements the absolute value of the cross sections of absorptions of neutrons is determined. First the experimental equipment is discussed at a figure. Here the 3 photoneutron sources in ball shape (Sb - Be), (Na - De₂O), and (Na - Be) were used. They formed

Card 1/3

The Measurement of the Absorption Cross Section of Fast
Neutrons

SOV/56-34-3-7/55

γ -preparations of Sb or NaF with 25 - 30 mm diameter, which were fixed in an 8 mm thick special target of Be or D₂O. The characteristics of these neutron sources are given in a table. The next paragraph deals with the computation of the cross section of the absorption, a respective formula is given and explained. Then the control tests and corrections are discussed in detail. The results of the here discussed measurements are compiled in a table. The method used here has the advantage that it does not require any absolute measurements of the neutron currents and of the β -activity of the samples, besides it can also be used for isotopes, which after the capture of the neutrons remain stable. With some isolated exceptions the data of this work agree well with the absorption cross sections obtained in various previous works. Further the author tried to estimate the increase of the cross section of absorption which was caused by the elastic and inelastic collisions of the neutrons. The here discussed method permits for neutrons with energies of 25 and 220 keV the estimation of the absorption cross section with an accuracy of from 3 - 15%, and in case of neutron energies of 830 keV the here obtained values of the cross section of absorption are too high by 20 - 30%. The author suggests experiments with a detector which has a more constant energy dependence of the sensitivity at neutron energies below 1 MeV. But this

Card 2/3

BOV/56-34-3-7/55

- The Measurement of the Absorption Cross Section of Fast Neutrons

is purchased with a deterioration of the characteristic for higher energies.

There are 1 figure, 2 tables, and 18 references, 1 of which is Soviet.

SUBMITTED: September 28, 1957.

Form.

Card 3/3

BELANOVA, T. S.

DATE: 11/11/2021

(b) (5)

International Conference on the Peaceful Uses of Atomic Energy, 22, Geneva, 1958

Ms. (title page) is A.L. ALLISON, *London*; V.L. WALKER, *London*; and G.A. WALKER, *Cambridge* of *Physical and Mathematical Sciences*; Ms. of this volume is L.L. BRYDGER and J.P. SURVEY, *Cambridge* of *Physical and Mathematical Sciences*; Ms. (Dante book) is L.L. BRYDGER, *South*; Ms. 30.2.1. *South*.

NOTE: This collection of articles is intended for scientific research workers and other persons interested in nuclear physics. The volume contains 45 papers presented by Soviet Scientists at the Second Conference on Peaceful Uses of Atomic Energy, held in Moscow in September 1959.

CONTENTS: It is divided into two parts. Part I contains 17 papers dealing with plasma physics and controlled thermonuclear reactions, and Part II contains 26 papers on nuclear physics, including problems of particle classification and of cosmic ray physics. The first paper by L. A. Brueckner presents a review of developments in controlled thermonuclear reactions. The remaining papers in Part I deal with particular problems in this field.

[illegible]

INDEX OF COMPANIES

Journal of World Literature: Index (Cont.)

Topic/Issue

Barney, S.I., and A.M. Gardner. *Combs Ray Studies in the USSR by Means of Insects and Spiders* (Report 1955).
Parasitology mentioned include A.I. Labatinsky, V.A. Ervash, P.V. Shul'ov, S.I. Pash'ina, V.I. Shul'ov, B.I. Logadov, P.V. Vashlov, and N.V. Gardner.

Dr. Nuclear Reactions Caused by Heavy Ions (Import 22-99)

Gradov, L.V., A.M. Budakov, V.I. Lutsenko, and V.I. Polubny, Spectrum of γ -radiation capture of thermal neutrons and distribution of nuclear levels (March 1953)

[illegible]

Kermatiz, A. L., O. B. Shashkivsky, S. Ya. Artyukhov, A. L. Buzdubayev,
 S. B. Malozemov, V. L. Galinov, Ya. B. Stevjakov, G. A. Stepanov, and A. Ye.
 Gerasimov. *Journal of the Soviet Union of Geodesy and Photogrammetry* (1959) 114

1. The first step in the process of identifying a problem is to recognize that a problem exists. This is often done by comparing current performance with a desired state or goal. If there is a significant difference, a problem is identified.

BELANOVA, T. S. Cand Phys-Math Sci -- "Cross-section of ~~the~~ absorption of fast neutrons by matter." Mos, 1960 (KL, 1-61, 178)

S/089/60/008/06/07/021
B006/B063 82308

21.1310

AUTHOR: Belanova, T. S.

TITLE: Past Neutron Absorption Cross Sections 19

PERIODICAL: Atomnaya energiya, 1960, Vol. 8, No. 6, p. 549

TEXT: Three neutron sources were used to determine the absorption cross sections mentioned in the title: (Sb-Be): 24 ± 3 kev; (Na-D₂O): 220 ± 20 kev; (Na-Be): 830 ± 40 kev. The results, which were corrected for neutron scattering from the walls of the casing, for the finite dimensions of the sources, for the finite distance between detector and neutron source, and for multiple neutron scattering, are given in a Table (in millibarns):

Card 1/3

Fast Neutron Absorption Cross Sections

S/089/60/008/06/07/021
B006/B063 82308

Element	Neutron energy in kev		
	24	220	830
Si	42±8	10±5	20±10
S	<22	<19	<21
Ti	23±6	21±20	11±20
Cr	162±7	-	-
Fe	-	8±2	-
Sr	99±9	124±30	105±20
Mo	262±11	70±6	110±10
Ag	984±49	452±40	230±23
Te	240±30	-	-
I	990±40	-	-
W	-	-	91±35
Au	605±30	330±30	224±24
Hg	230±10	126±6	103±11
Th	-	213±5	-
U	568±10	146±16	161±6

Card 2/3

Fast Neutron Absorption Cross Sections

S/089/60/008/06/07/021
B006/B063 82308

The absorption cross sections in gold and silver are given according to calculations of Sh. S. Nikolayshvili. The data given in this article are, with few exceptions, in good agreement with the results published by other authors (Refs. 2, 7 - 10). There are 1 figure, 1 table, and 10 references: 4 Soviet and 5 American.

PRESENTED: January 11, 1960

Card 3/3

X

S/089/63/014/002/007/019
B102/B186

AUTHORS: Belanova, T. S., Kazachkovskiy, O. D.

TITLE: Influence of nucleon parity effect on the radiative capture cross section

PERIODICAL: Atomnaya energiya, v. 14, no. 2, 1963, 185 - 192

TEXT: Hitherto the radiative capture cross sections have been measured mainly for even-even and odd-even nuclei. The present authors have now measured it also for many even-odd nuclei, in order to make comparisons with other parity types and draw conclusions as to the effect of parity. The capture cross sections of even-odd nuclei ($\sigma_c(e-o)$) were determined by subtracting the capture cross sections of the even-even isotopes ($\sigma_c(e-e)$) from the absorption cross section of the natural isotopic composition σ_a . Since in the natural isotopic composition the even-odd admixture amounts to only a few % the errors are considerable. In all investigated isotopes $\sigma_c(e-o) \gg \sigma_c(e-e)$. From a comparison of the experimental data of 130 neighboring even-even and odd-even isotopes it was found

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Influence of nucleon parity...

S/089/63/014/002/007/019
B102/B186

that in 60% of the cases $\sigma_c(o-e) > \sigma_c(e-e)$, in 22% cases $\sigma_c(o-e) = \sigma_c(e-e)$, and in 18% cases $\sigma_c(o-e) < \sigma_c(e-e)$. 56 out of 60 cases of even-odd and odd-even pairs had $\sigma_c(e-o) > \sigma_c(o-e)$. The proportionality factor of this cross section depends somewhat on the neutron energy. The experimental data were obtained for $E_n = 24, 150, 175, 220, \text{ and } 830 \text{ kev}$. Of the different factors affecting σ_c the most important is the excitation energy on neutron capture which determines the level density ρ . Two possibilities are considered here: (a) ρ determines the true excitation energy which is equal to the sum of the binding energy E_b and the kinetic energy E_k of the neutron; (b) the excitation energy is reckoned not from the ground state but from the Hurwitz-Bethe level E_c so that $\rho = \rho(E_b + E_k - E_c)$. The effects of the different factors can be represented as follows:

Card 2/3

Influence of nucleon parity...

S/089/63/014/002/007/019
B102/B186

	(e-e)	(o-e)	(e-o)
Difference in the excitation energy (a)	-	-	+
" " " " (b)	-	+	+
Spin $q \sim (1I+1)$, I being the spin factor of the compound nucleus	-	+	+
Spin factor	+	-	-
Nuclear dimensions	-	+	+
Concurrence by inelastic scattering	-	+	+

The effects with + sign are larger than those with - sign. Similar signs signify that the effects are of about the same magnitude. The data do not agree with the assumptions of Hurwitz and Bethe (Phys. Rev. 81, 898, 1951) about the characteristic levels. There are 3 figures and 5 tables.

SUBMITTED: May 27, 1961

Card 3/3

S/903/62/000/000/013/044
B102/B234

AUTHOR: ~~Belanova, T. S.~~

TITLE: Measurement of the fast-neutron absorption cross section for materials

SOURCE: Yadernyye reaktsii pri malykh i srednikh energiyakh; trudy Vtoroy Vsesoyuznoy konferentsii, iyul' 1960 g. Ed. by A. S. Davydov and others. Moscow, Izd-vo AN SSSR, 1962, 171-177

TEXT: The fast-neutron absorption cross sections were determined by the transmission method in direct spherical geometry, which excludes elastic scattering effects. The measurements were made with three photo-neutron sources, Sb-Be, Na-D₂O and Na-Be, emitting neutrons of 24₊₃, 220₊₂₀ and 830₊₄₀ kev, and an energy-independently recording detector. The materials whose absorption was measured were prepared as empty spheres of 12-18 cm diameter; the cavity diameter was 3 cm. A detailed investigation was made of all possible perturbing effects, a series of control measurements were carried out and the necessary corrections were determined. The absorption cross sections of the following even-odd isotopes were determined for all

Card 1/2

Measurement of the fast-neutron...

S/903/62/000/000/013/044
B102/B234

three energy ranges: Si, S, Ti, Cr, Mn, Fe, Co, Ni, Se, Sr, Nb, Mo, Ag, Te, I, W, Au, Hg, Th, U. For Ag, I, and Au, σ_{abs} was largest and for Si, Ti, Fe, Ni, and Mn it was small. The curve $\sigma_{abs}(Z)$ is characterized by deep minima in the ranges of closed shells though there were no isotopes with magic neutron numbers. The cross sections were always higher than for the neighboring even-even isotopes which agrees qualitatively with the fact that the cross sections are proportional to the level density ρ of the compound nucleus; ρ is determined by the binding energy of the added neutron, which is for even-odd nuclei by 2-3 Mev larger than for even-even. The fact that the contributions of even-odd isotopes to the total neutron absorption cross sections have to be taken into account is of great importance for fast reactor design. There are 3 figures and 1 table.

ASSOCIATION: Fiziko-energeticheskiy institut Gosudarstvennogo Komiteta Soveta Ministrov SSSR po ispol'zovaniyu atomnoy energii (Physics and Power Engineering Institute of the State Committee of the Council of Ministers of USSR on the Utilization of Atomic Energy)

Card 2/2

BELANOVA, T. S.; KAZACHKOVSKIY, O. D.

Effect of the parity of the number of nucleons on the magnitude of the cross section of radiation capture. Atom. energ. 14 no.2:185-192 F '63. (MIRA 16:1)

(Neutrons—Capture) (Nucleons)

STAVISSKIY, Yu.Ya.; ABRAMOV, A.I.; BELANOVA, T.S.; VAN'KOV, A.A.;
KOROLEVA, V.P.

Photoneutron laboratory for research involving high-activity
sources. Atom. energ. 15 no.6:489-493 D '63. (MIRA 17:1)

BELANOVA, T.S.; VAN'KOV, A.A.; MIKHAYLUS, F.F.; STAVISSKIY, Yu.Ya.

Absolute measurements of the absorption cross sections for 24 Kev.
neutrons. Atom. energ. 19 no.1:3-7 J1 '65. (MIRA 18:7)

L 6448-66 ENT(m)/EPF(n)-2/EWA(h) DM
ACCESSION NR: AP5019802

UR/0089/65/019/001/0003/0007
539.17.02.:539.172.4 27

AUTHOR: Belanova, T. S.; Ban'kov, A. A.; Mikhaylus, F. F.; Stavisskiy, Yu. Ya. 2/3

TITLE: Absolute measurements of the absorption cross sections of 24-kev neutrons

SOURCE: Atomnaya energiya, v. 19, no. 1, 1965, 3-7 19

TOPIC TAGS: neutron cross section, neutron absorption, measuring apparatus

ABSTRACT: Inasmuch as the published cross section values were obtained by methods sensitive to the softening of the incident neutrons, the authors made their measurements by the transmission method and with a spherical geometry, using an all-wave detector whose efficiency does not depend on the neutron energy in the investigated region. An Sb-Be neutron source, with outside diameter 30 mm and with beryllium cladding 2, 4, and 6 mm, was used. The source intensity was 10^8 neut/sec. The all-wave neutron detector comprised a long counter and an independent water tank with a system of integrating fission chambers. The measurement setup is shown in Fig. 1 of the Enclosure. The measured samples were made in the form of spherical layers with the neutron source placed inside. Some elements were in pure form, and others included a lead-bismuth alloy as a scatterer to improve the accuracy. The errors are analyzed and the data reduction method is discussed in detail. The

Cord 1/4

L 6448-66

ACCESSION NR: AP5019802

6

obtained cross sections are listed in Table 1 of the Enclosure. The results agree with the data of Schmitt and Cook (Nucl. Phys. v. 20, 202, 1960) if their correction for resonance blocking is disregarded. Some discrepancies with results by others are mentioned. "The authors thank A. A. Leypunskiy and O. D. Kazachkovskiy for continuous interest in the work, and N. A. Artemov, V. V. Piskunova, Yu. M. Nikitin, and L. Ye. Fedorov for help with the adjustment of the apparatus, the measurements, and the data reduction." Orig. art. has: 3 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 09Nov64

ENCL: 02

SUB CODE: NP

NR REF SOV: 005

OTHER: 008

Card 2/4

L 6448-66

ACCESSION NR: AP5019802

ENCLOSURE: 01

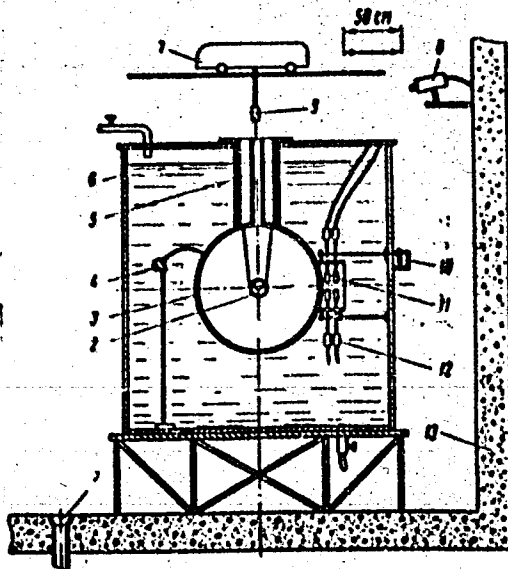


Fig. 1. Diagram of measurement setup (water tank).

- 1 - Well (source storage), 2 - sample,
- 3 - aluminum sphere, 4 - integrating fission chamber,
- 5 - neck of sphere with "water" stopper,
- 6 - tank body, 7 - transporter for source,
- 8 - television camera,
- 9 - magnetic clamp for extraction of source,
- 10 - drive of moving system of flat fission chambers,
- 11 - flat fission chamber, 12 - cathode follower jacket,
- 13 - concrete shield.

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ACCESSION NR: AP5019802

ENCLOSURE: 02

Table 1. Averaged 24-kev neutron absorption cross sections

Element	σ_a , mb	Element	σ_a , mb
Cr	10 \pm 4	Sn	128 \pm 9
Cu	59 \pm 8	Sb	580 \pm 73
Zn	64 \pm 7	W	300 \pm 25
Zr	19 \pm 5	Au	570 \pm 30
Nb	270 \pm 15	Hg	233 \pm 30
Mo	192 \pm 12	Pb	43 \pm 7
Ag	980 \pm 60	Bi	8 \pm 3
Cd	284 \pm 20	Th	615 \pm 25
In	778 \pm 68	U ²³⁸	412 \pm 18

beh

Card 4/4

KALIKSHTEYN, D. B.; BELANOVA, Ye. A.

Heart - Diseases

Cardiac aneurysms. Klin. med. 31, No. 1, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Uncl.

LAPKIN, I.I.; BELANOVICH, M.I.

Reactions of metal halide alcoholates. Part 10: New method of
synthesizing mono α -oxytriarylmethanes. Zhur.ob.khim. 31 no.10:
3182-3187 0 '61. (MIRA 14:10)

1. Permskiy gosudarstvennyy universitet.
(Methane)

BELOVSKIY, A.

Our weapon is vigilance ("Insidious methods of undermining activity
by the imperialist intelligence services" by I. Nikitinskiy.
Reviewed by A. Belanovskii). Voen. znani. 30 no.11:24 N '54.

(MIRA 11:6)

(Espionage, American) (Nikitinskiy, I.)

BELANOVSKIY, A.

AID P - 4896

Subject : USSR/Aeronautics - Trainees' Education (DOSAAF)

Card 1/1 Pub. 58 - 2/12

Author : Belanovskiy, A., Guards Colonel

Title : High sense of discipline is a pledge of success both in combat and in training.

Periodical : Kryl. rod., 8, 2-3, Ag 1956

Abstract : Discipline is praised because it contributes to making any organization flexible, and because it instills the members of the organization with one single will. The content of the Soviet notion of discipline is defined. One photo.

Institution : None

Submitted : No date

TAVROV, Yakov Markovich (Gvin); BE LANOVSKIY, A., red.; KLIMOVA, T., tekhn.
red.

[Creating mountains from grains of sand and seas from drops] Iz
peschinok - gory, iz kapel' - moria. Moskva, Gos. izd-vo polit.
lit-ry, 1961. 69 p. (MIRA 14:7)
(Industrial management)

B. LAMONSKY, A.D.

"Use of an asynchronous motor of normal performance instead of a crane type motor."

Rab. energ. 2 no.8, 1952

1. BELANOVSKIY, A. D.
2. USSR (600)
4. Electric Motors
7. Protective coating for open parts of the winding of electric motors, Bum. prom., 27, No. 10, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953, Unclassified.

1. BELANOVSKIY, A. D.
2. USSR (600)
4. Electric Motors, Induction
7. Substitution of an asynchronous electric motor for a crane motor, Bum. prom., 27, No. 11, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

BEKANOVSIIY, A.D., inzhener.

Experience in redesigning a magnetic starter. Energetik 1 no.7:
18-19 D '53. (MIRA 6:12)
(Magnetolectric machines)

BELANOVSKIY, A.D., nachal'nik elektrootdela.

Utilisation of the "metallurgical effect" of fuses. Bum prom. 28 no.6:24-
25 Je '53. (MLRA 6:6)

1. Priozerskiy tsellyuloznyy zavod.

(Electric fuses)

BELANOVSKIY, A.D.

Reconstructing a magnetic starter. Bum. prom. 28 no.12:26 D '53.
(MIRA 6:12)

1. Priozerskiy tsellyuloznyy zavod.
(Magnetolectric machines)

S/078/60/005/010/008/021
B004/B067

AUTHORS: Alikberov, S. S., Shklover, L. P., Syromyatnikova, A. S.,
Belanovskiy, A. S.

TITLE: Use of Acetonitrile as Complex-forming Substance in the
Purification of SiCl_4 and SiHCl_3

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 10,
pp. 2258-2260

TEXT: The authors checked the data from Refs. 6,7 according to which impurities can be easily separated from silicon tetrachloride and trichlorosilane by means of acetonitrile. They found that this applies for SiCl_4 because a mixture of SiCl_4 and CH_3CN is separated into two layers (Fig.). SiCl_4 takes up 2 wt% of CH_3CN which must be removed by fractional distillation. Since, however, an azeotropic mixture boiling at 49-50°C is formed, this method leads to considerable losses in SiCl_4 . The data of Refs. 6,7 do not apply for SiHCl_3 . SiHCl_3 and CH_3CN are mixible at any ratio. This is also confirmed by the polarity of these

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Substance in the Purification of SiCl_4 and
 SiHCl_3

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B004/7067

compounds (Table 1). Hence, the authors used the capability of acetonitrile of forming complexes with metal salts to purify silicon chlorides. They added only 1-2 vol% of acetonitrile and achieved good purification by fractional distillation. The residue contained the complexes of acetonitrile with Al, Fe, Cu, Mg, Mn, and Ti. Table 2 shows the purification of SiHCl_3 obtained herewith. The complex formation of CH_3CN with iron was examined also by means of Fe^{55} . Activity was measured with an MCT-17A (MST-17) counter of a B-2A (B-2) apparatus (Table 3). Formamide was successfully applied instead of acetonitrile. With iron, hydrocyanic acid which is formed in this case forms nonvolatile compounds. The results of experiments with formamide and Fe^{55} are given in Table 4. There are 1 figure, 4 tables, and 11 references: 6 Soviet, 1 US, 3 German, and 1 Polish.

SUBMITTED: July 10, 1959

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84254

S/076/60/034/009/019/022
B015/B056

24.7700

AUTHORS:

Sotnikov, V. S. and Belanovskiy, A. S.

TITLE:

Ion Adsorption of Some Metals During the Etching and the Washing of Silicon

PERIODICAL:

Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 9,
pp. 2110-2114

TEXT: The electrical properties and the stability of crystalline semiconductor diodes and triodes essentially depends on the surface of the semiconductor. V. I. Lyashenko and I. I. Stepko (Ref. 1) investigated the adsorption of some substances, as well as their influence upon the surface charge and conductivity of semiconductors. As the hydrofluoric and nitric acids, the lyes, and also the rinsing water used for silicon etching may contain admixtures such as iron, copper, and other heavy metals in quantities from $1 \cdot 10^{-5}$ to $1 \cdot 10^{-3}\%$, the adsorption of Cu, Ag, Au, In, Sb, P, Fe, Zn, Rb, and Na on the surface of the silicon was investigated with the aid of the corresponding radioisotopes. As samples, p-type silicon foils were used, which were etched in the etching solutions.

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activated with the elements to be investigated, and were rinsed with activated water. The activity of the adsorbed element was measured on the sample by means of an MC -7(MS-7) or MCT -17(MST-17) counter by using a G-2(B-2)-type device. The adsorption amounted to 10^{14} - 10^{17} atoms per unit area of the silicon surface at a content of the afore-mentioned elements in the etching agent of from $1 \cdot 10^{-3}$ to $10^{-4}\%$ (Table 1). It was found that in the elements of the first group of the periodic system it is possible that, in the direction from copper to gold, an increase of adsorption takes place (Table 2), and that this may possibly be due to the electrochemical potential of the elements. Moreover, it was found that during washing out the silicon with water, an adsorption of the ions Cu, Ag, P, Fe, Zn, Rb, Na, Sb, In, and Au contained in the water takes place, viz., $1 \cdot 10^{15}$ - $1 \cdot 10^{17}$ atoms per unit area of the silicon surface (Table 3). The adsorption of Ag and Au ions by silicon is directly proportional to their content in the etching agent. A repeated treatment of the silicon with boiling bidistilled water does not reduce the number of Ag and Au atoms adsorbed on the silicon surface, whereas treatment with complex formers (potassium cyanide, dithizone, methyl cyanide, and EDTA solutions)

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considerably reduces the number of elements adsorbed on the silicon surface (Table 4), and that in this way the semiconductor surfaces may be purified. There are 2 figures, 4 tables, and 6 references: 2 Soviet and 4 US.

SUBMITTED: January 15, 1959

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24.7400

1143, 1160, 1155

S/076/61/035/003/003/023
B121/B203

AUTHORS: Sotnikov, V. S. and Belanovskiy, A. S.

TITLE: Adsorption of ions of some metals from water on a germanium surface

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 3, 1961, 509-512

TEXT: The authors studied the adsorption of phosphorus, copper, silver, antimony, and gold from aqueous solutions on a germanium surface with the aid of the radioisotopes P^{32} , Cu^{64} , Ag^{110} , Sb^{124} , In^{114} , and Au^{198} . Before the experiments, the germanium specimens were etched with H_2O_2 and dried on filter paper to remove the H_2O_2 . Then, they were introduced in a solution of the respective radioactive element in bidistilled water, and the solution was heated to $100^\circ C$ for 5 min. The germanium was removed from the solution, dried, and its radioactivity was measured. Two mechanisms are possible in the adsorption on the germanium surface: (1) Separation of metals in elementary state, (2) adsorption of metals in ionic state. In elements with positive electrochemical potential, the former mechanism is preferred. The

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germanium metal or germanium monoxide formed besides GeO_2 in the etching of the germanium surface with H_2O_2 acts as electron source on the germanium surface. The derivatives of divalent germanium are strong reducing agents, especially in the hydrated form. Hydrated germanium monoxide reduces the metals from the solution with simultaneous conversion to germanium dioxide according to the equation:



The separation of metals on the germanium surface was also microphotographically examined under an electron microscope. At a metal concentration in the solution of 10^{-5} - $10^{-2}\%$, adsorption attains a value of 10^{16} - 10^{18} at/cm² of the germanium surface. There are 5 figures, 1 table, and 6 references: 3 Soviet-bloc and 3 non-Soviet-bloc. The three references to English-language publications read as follows: E. Clark, Phys. Rev., 91, 765, 1953; J. Law, J. Phys. Chem., 59, 67, 1955; S. Eriksen, H. Statz, J. Appl. Phys., 28, 1, 1957.

SUBMITTED: April 12, 1959

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SOTNIKOV, V.S.; BELANOVSKIY, A.S. (Moscow)

Adsorption of certain metal ions from water on the surface of
germanium. Zhur. fiz. khim. 35 no.3:509-512 Mr '61. (MIRA 14:3)
(Germanium) (Adsorption) (Metal ions)

21981

S/020/61/137/005/025/026
B103/B208

9,43/0(1143,1150,1160)

AUTHORS: Sotnikov, V.S. and Belanovskiy, A.S.

TITLE: Adsorption of ions of some metals in etching and rinsing of germanium and silicon

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 5, 1961, 1162 - 1165

TEXT: The authors studied the behavior of impurities in etching media and in water which are used for etching and rinsing, respectively, of germanium and silicon of the crystal diodes. The instability of the surfaces of Ge and Si is known to be due to interaction with the surrounding media. But there are hardly any data available in publications on the adsorption of metal ions from the etching reagents and from distilled water, although heavy metals (Cu, Fe, Ag, and others) are there present in quantities of $1 \cdot 10^{-5}$ - $1 \cdot 10^{-3}$ %. These impurities affect both the parameters of the semiconductor devices: noise factor, amplification factor, inverse currents, limiting frequency, and of the semiconductor: surface recombination rate, work function. In spite of this fact, they are hardly discussed in

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publications. The authors used in their experiments polished laminae, $3 \times 3 \times 0.25$ mm, from germanium and silicon of the n- and p-type. They were oriented in the plane 111, and had a resistivity of $15 \text{ Ohm}\cdot\text{cm}$. The following etching reagents were used: 30% H_2O_2 and 10% KOH solutions, and a mixture of HF (42%) and HNO_3 (60%) in a ratio of 1 : 4, in which radioactive indicators were introduced in the form of nitrates and chloric salts. The specific activity of the solutions in the individual experiments ranged from 0.1 to 5 m curies/ml. The activity of the etching reagent was first determined 0.01 ml of it were placed into a square cavity (3×3 mm) of the paraffin layer on a little aluminum dish, and the activity measured considering the autoabsorption of the β -radiation in the liquid. In the following the activity of one side of the sample (the other side was polished) was determined at equal dimensions. Ge and Si were etched in an aliquot of the etching reagent for 3.0 min at room temperature in a $\text{HF-NH}_4\text{NO}_3$ mixture, and by heating in H_2O_2 and in KOH. The rest of the radioactive corrosive was rinsed from the surface of the samples with ethanol, and the activity of the samples was measured after drying on filter paper. The results for Ge are summarized in Table 1. They indicate that at the

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same time different elements are adsorbed on the surface of the Ge and Si samples. The adsorption of P, Ag, and Au is proportional to their content in the corrosive. In the major part of the tested elements the rinsing of the etched samples with hot twice-distilled water for the removal of these impurities was little effective. The authors used in their experiments twice-distilled water to which the radioactive isotope of the corresponding element was added. Table 2 shows the adsorption of the elements by Ge and Si from water. The adsorption of P, Cu, and Au was found to be proportional to the rinsing time of the samples. Finally, the authors studied the effect of complex formers on the purification of the surfaces of Ge and Si: 1% solution of dithizone in CCl_4 , 1% KCN solution, methyl cyanide and a saturated solution of Trilon-B.⁴ The Ge and Si samples were treated with a solution of the complex former after having determined the adsorbed element, and then the activity was measured. A portion of the sample was rinsed ten times with hot twice-distilled water for comparison. These experiments proved the efficiency of complex formers for the purification of Ge and Si surfaces and of pn-junctions. The results are presented in Table 3. According to the authors, acetonitrile, dithizone, and other

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organic complex formers are most suitable for this purpose, since their traces may be washed off by high-purity organic solvents (CCl_4 , chloroform, benzene, and others). The use of water and, as a result, an additional contamination by adsorption could thus be avoided. Treatment of pn-junctions of Si with acetonitrile reduced the inverse current in the collector to $1/2 - 1/4$, and increased the stability of the device. There are 3 figures and 6 references: 3 Soviet-bloc and 3 non-Soviet-bloc. The 3 most recent references to English language publications read as follows: J.T. Law (Ref. 1: J. Phys. Chem., 59, 1, 67, 1955), J.T. Law, P.S. Meigs (Ref. 2: App. Phys., 26, 10, 1265, 1955), E. Clarke (Ref. 4: Phys. Rev., 95, 1, 284, 1954).

PRESENTED: September 9, 1960 by A.N. Frumkin, Academician

SUBMITTED: September 20, 1960

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Таблица 1
Адсорбция германием различных элементов при травлении в H_2O_2 и KOH
и смеси кислот и KOH

Элемент	Конц. элемен- та в растворе, %	п., ат см ² дл	Конц. элемен- та в растворе, %	п., ат см ² дл
д	д	дл	д	дл
	H_2O_2		KOH	
1 Фосфор	$6,16 \cdot 10^{-2}$	$2,08 \cdot 10^{13}$	$2,59 \cdot 10^{-2}$	$1,36 \cdot 10^{17}$
2 Железо	$1,41 \cdot 10^{-2}$	$2,90 \cdot 10^{13}$	$7,00 \cdot 10^{-2}$	$4,75 \cdot 10^{13}$
3 Медь	$9,90 \cdot 10^{-2}$	$3,28 \cdot 10^{17}$	$1,34 \cdot 10^{-2}$	$8,36 \cdot 10^{14}$
4 Серебро	$3,72 \cdot 10^{-2}$	$2,06 \cdot 10^{16}$	$1,08 \cdot 10^{-2}$	$4,34 \cdot 10^{16}$
5 Золото	$1,01 \cdot 10^{-2}$	$1,80 \cdot 10^{16}$	$1,0 \cdot 10^{-2}$	$1,22 \cdot 10^{13}$
6 Цинк	$1,93 \cdot 10^{-2}$	$4,76 \cdot 10^{11}$	$3,58 \cdot 10^{-2}$	$6,80 \cdot 10^{11}$
7 Индий	$1,80 \cdot 10^{-2}$	$2,85 \cdot 10^{16}$	$1,0 \cdot 10^{-2}$	$2,69 \cdot 10^{16}$
8 Натрий	$1,0 \cdot 10^{-1}$	$5,92 \cdot 10^{16}$	$2,06 \cdot 10^{-2}$	$9,40 \cdot 10^{11}$
9 Рубидий	$7,18 \cdot 10^{-2}$	$1,12 \cdot 10^{13}$	$1,0 \cdot 10^{-2}$	$8,95 \cdot 10^{13}$
10 Сурьма	$1,0 \cdot 10^{-2}$	$4,57 \cdot 10^{13}$	$1,0 \cdot 10^{-2}$	$3,38 \cdot 10^{13}$

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	HNO ₃ + HF		KOH	
1 Фосфор	$2,10 \cdot 10^{-3}$	$1,85 \cdot 10^{16}$	$2,59 \cdot 10^{-3}$	$2,16 \cdot 10^{16}$
2 Железо	$1,45 \cdot 10^{-3}$	$3,44 \cdot 10^{16}$	$1,26 \cdot 10^{-3}$	$8,50 \cdot 10^{17}$
3 Медь	$4,50 \cdot 10^{-3}$	$2,59 \cdot 10^{16}$	$1,08 \cdot 10^{-3}$	$2,50 \cdot 10^{16}$
4 Серебро	$7,12 \cdot 10^{-3}$	$6,59 \cdot 10^{16}$	$1,00 \cdot 10^{-3}$	$6,04 \cdot 10^{16}$
5 Золото	$3,60 \cdot 10^{-3}$	$1,11 \cdot 10^{16}$	$3,58 \cdot 10^{-3}$	$1,37 \cdot 10^{16}$
6 Цинк	$1,15 \cdot 10^{-3}$	$9,55 \cdot 10^{16}$	$1,0 \cdot 10^{-3}$	$3,82 \cdot 10^{16}$
7 Индий	$8,75 \cdot 10^{-3}$	$2,31 \cdot 10^{16}$	$1,0 \cdot 10^{-3}$	$2,21 \cdot 10^{16}$
8 Сурьма	$6,52 \cdot 10^{-3}$	$1,11 \cdot 10^{16}$	$1,0 \cdot 10^{-3}$	$8,10 \cdot 10^{16}$
9 Натрий	$5,0 \cdot 10^{-3}$	$4,92 \cdot 10^{16}$	$1,0 \cdot 10^{-3}$	$8,90 \cdot 10^{16}$
10 Рубидий	$6,71 \cdot 10^{-3}$	$7,56 \cdot 10^{16}$		

* Здесь и в дальнейшем имеются в виду объемные проценты.

Table 1. Adsorption of elements by Ge. Legend: 1) Phosphorus;
2) iron; 3) copper; 4) silver; 5) gold; 6) zinc; 7) indium;
8) sodium; 9) rubidium; 10) antimony; 11) concentration of the
element in the solution, wt%; 12) $n_0 \frac{At}{2}$; 13) element.

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